

BTE REG. PCT/PTO 21 JAN 2005

18

ART 34 AMDT

BASF Aktiengesellschaft

January 20, 2005

B02/0105PCUS IB/AT/cca

Claims as enclosed to IPER

1. A continuously operated process for the purification by distillation of the 1,2-propylene glycol formed as by-product in the synthesis of propylene oxide, wherein the mixture formed in the synthesis which contains the 1,2-propylene glycol is separated in a dividing wall column into low-, intermediate- and high-boiling fractions and the 1,2-propylene glycol is taken off as intermediate boiler at the side offtake of the column.
2. The process as claimed in claim 1, wherein the dividing wall column consists of at least two thermally coupled columns.
3. The process as claimed in claim 1 or 2, wherein the dividing wall column has from 15 to 60 theoretical plates.
4. The process as claimed in any of claims 1 to 3, wherein the pressure at the top of the dividing wall column is from 5 to 500 mbar.
5. The process as claimed in any of claims 1 to 4, wherein the distillation temperature at the side offtake of the dividing wall column is from 50 to 200 °C.
6. The process as claimed in any of claims 1 to 5, wherein the sum of the key components in the purified 1,2-propylene glycol is less than 1 % by weight, with the sum of 1,2-propylene glycol and key components being 100 % by weight.
7. The process as claimed in any of claims 1 to 6, wherein the mixture containing 1,2-propylene glycol is prepared in a process comprising at least the steps (i) to (iii):
 - (i) reaction of the hydroperoxide with propylene to give a product mixture comprising propylene oxide and unreacted hydroperoxide,
 - (ii) separation of the unreacted hydroperoxide from the mixture resulting from step (i),
 - (iii) reaction of the hydroperoxide which has been separated off in step (ii) with propylene.

ART 34 AMDT

8. The process as claimed in claim 7, wherein an isothermal fixed-bed reactor is used in step (i), an adiabatic fixed-bed reactor is used in step (iii) and a separation apparatus is used in step (ii).
9. The process as claimed in any of claims 1 to 8, wherein hydrogen peroxide is used as hydroperoxide and propylene is brought into contact with a heterogeneous catalyst during the reaction.
10. An apparatus for carrying out a continuously operated process for the purification by distillation of the 1,2-propylene glycol formed as by-product in the synthesis of propylene oxide with hydroperoxide and propylene, wherein the apparatus comprises at least one isothermal fixed-bed reactor and one adiabatic fixed-bed reactor and also a separation apparatus in which unreacted hydroperoxide is separated, and at least one dividing wall column for purifying the 1,2-propylene glycol by distillation, which dividing wall column is equipped with an inlet via which wastewater of the propylene oxide synthesis comprising 1,2-propylene glycol is fed into the dividing wall column, and wherein a reaction of propylene with hydroperoxide is performed in the isothermal reactor to give a product mixture comprising propylene oxide and unreacted hydroperoxide, and wherein the hydroperoxide which has been separated off is reacted with propylene in the adiabatic reactor.